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ABSTRACT

What does it take for a project to be successful? This question has been asked several times in the past two decades, as it rightly should. We need to continually assess what factors help contribute to a successful project, and do so from a variety of perspectives. This research-in-progress paper presents a review of project management success factors that have been identified over the past two decades and reports on the preliminary results of a recent survey of project managers throughout the United States and abroad who present their current perspective on what is needed for a project to be completed successfully.

Keywords

project success factors

INTRODUCTION – The CHAOS Studies

For years, project managers and systems professionals suspected that there was room for improvement in the way system development projects were implemented, but until the pivotal 1994 CHAOS Study, we didn't realize just how poorly we were doing. That study indicated that software development projects were only realizing a discomforting 16.2% average success rate, defined as a project completed on time and within budget. Almost 1/3 of all system projects were ultimately cancelled, and more than half of the projects would cost almost twice the original estimate, with considerably less functionality than originally proposed. The study went further, asking the question, "What makes a successful project successful?" The top 10 success factors were:

1. User Involvement
2. Executive Management Support
3. Clear Statement of Requirements
4. Proper Planning
5. Realistic Expectations
6. Smaller Project Milestones
7. Competent Staff
8. Ownership
9. Clear Vision and Objectives
10. Hard-working, Focused Staff

(Standish Group, 1994)

These factors and corresponding success rates have been reassessed several times since the initial CHAOS study. In 2000, the Standish Group reported that the success rate increased to 28%, and the percentage of projects cancelled dropped to 23%. Time overruns had dropped in the 2000 study, but increased again by 2003. Likewise, the percentage of required features actually included in the final product rose in 2000, but fell to just over 50% by 2003. Success rates reported in the 2003 and 2004 studies showed continued improvement, up as high as 34% and leveling off to 29%, while the failure rate continued to drop to 15% and 18%, respectively. Through the years, the top two criteria changed places, but by 2004 User Involvement was again first with Executive Management Support a close second.

ADDITIONAL BACKGROUND

Although the CHAOS findings are arguably the most widely known studies of project success factors, earlier studies by Pinto and Slevin resulted in a slightly different list of project success factors. In addition to identifying several critical success

factors, they state, "monitoring and feedback, communication, and trouble shooting must all necessarily be present at each point in the implementation process" and "communication is vital for project control, for problem solving, and for maintaining beneficial contacts with both clients and the rest of the organization." (Slevin and Pinto, 1987, 35). Pinto and Slevin (1988) identified the following critical success factors and external influences for project success:

Critical Success Factors:
1. Clear project mission
2. Top management support
3. Detailed project schedule
4. Effective client consultation
5. Personnel recruiting, selection, and training
6. Technical expertise
7. Client acceptance
8. Monitoring and feedback
9. Communication
10. Troubleshooting.

External Influences:
1. Project leader characteristics
2. Organizational power and politics
3. Environmental effects
4. Project urgency

(Pinto and Slevin, 1988)

Pinto and Slevin (1989) also identified the development phase during which a critical success factor was most predominant, as summarized in Table 1. The authors note that the most prevalent critical success factor is a clear project mission.

Factor	Phase			
	Conceptualization	**Planning**	**Execution**	**Termination**
Clear project mission	X	X	X	X
Effective client consultation	X			
Personnel recruiting, selection, and training	X			X
Project urgency	X			
Environmental effects		X		
Detailed project schedule		X		X
Monitoring and feedback		X		
Client acceptance		X		X
Technical expertise			X	X
Top management support			X	

Table 1. Project Critical Success Factors by Development Phase (Pinto and Slevin, 1989)

These early studies laid the foundation for understanding what factors should be considered in attempting to achieve the goal of successfully completing a development project. Recent studies have emphasized additional factors:

- using a Balanced Scorecard Approach to measure project objectives (Norrie and Walker, 2004)
- adopting the *appropriate* project management approach considering factors such as novelty, complexity, technology used, and schedule pace (Shenhar, et al., 2005)
- transformational project manager leadership styles (Prabhaker, 2005)

- properly defining success criteria, collaborative working relationships between the project manager and sponsor, empowering the project manager with flexibility, and the owner taking an interest (Jugdev and Muller, 2005)
- clearly defined project scope (Lagace, 2006)

CURRENT SURVEY OF PROJECT MANAGERS

Building on this work, and as an attempt to gain further insight into what project managers believe are the key criteria for project management success today, we conducted an international survey of project managers, asking what they believed were the most influential project success factors. The recipients of the survey were selected from a random list of members of the Project Management Institute. One thousand surveys were mailed – 500 within and 500 outside the United States. Seven and fourteen surveys, respectively, were returned due to expired addresses. Forty-seven surveys from the United States, and forty-eight outside the United States were completed and returned yielding response rates of 9.5% and 9.9%, respectively.

Demographic Information

Table 2 provides a list of the demographic information reported by these project managers.

Demographic	U.S.	Non U.S.	Total
Industry			
Aerospace	0	1	1
Financial Services	2	1	3
Computer/Technology	12	13	25
Consulting	15	10	25
Education	2	2	4
Engineering	1	0	1
Government	7	2	9
Health Services	0	1	1
Insurance	3	1	4
Manufacturing	2	0	2
Petroleum	0	1	1
Telecom	3	9	12
Transportation	0	2	2
Utilities/Energy	1	1	2
# of employees in firm			
<50	7	11	18
50-99	2	2	4
100-249	2	1	3
250-499	2	1	3
500-999	4	2	6
1,000-2,499	1	2	3
2,500-5,000	7	4	11
>5,000	22	21	43
# employees in IT			
<10	6	11	17
10-49	6	2	8
50-99	2	3	5
100-249	4	3	7
250-499	4	2	6
500-999	7	5	12
1,000-2,499	3	4	7
>2,499	14	13	27
Title			
Database Administrator	1	0	1
Systems Engineer	0	0	0
Project Manager	27	23	50

Development Manager	1	1	2
Program Manager	16	11	27
Other	0	8	8
Years current position	10.96	12.79	11.88
Years at company	6.17	8.99	7.59
Total IT years experience	18.35	22.20	20.30
Gender			
Male	33	34	67
Female	13	10	23
Age			
30-34	3	0	3
35-39	4	1	5
40-44	12	7	19
45-49	3	13	16
50-54	11	12	23
55-59	10	8	18
60-64	3	3	6

Table 2 – Demographic Information

As seen in Table 2, the majority of the respondents indicated that they worked in either the computer/technology or consulting industry, and the size of their organization was skewed toward either quite small or quite large. The vast majority listed their position as either Project Manager or Program Manager, and overall have considerable experience in their current position as well as within the information technology area, with non-U.S. respondents having a little more experience than their U.S. counterparts. The mean age was approximately 49, non-U.S. respondents slightly older than the U.S. respondents, and approximately three-fourths of the respondents were male,.

Project Characteristics

The survey also asked the respondents to indicate, during the past three years, the approximate number of projects worked on of calendar month durations of less than three months, three–twelve months, and greater than twelve months, as well as the relative amount of time devoted to projects in these same categories. Table 3 provides a summary of the responses.

	Calendar Months			Total
	< 3 months	3-12 months	> 12 months	
U.S.				
# of projects worked on	369	252	128	861
% of total projects worked on	42.9%	29.3%	14.9%	100%
Relative time spent	33.5%	45.7%	53.6%	
Non U.S.				
# of projects worked on	322	256	123	696
% of total projects worked on	46.3%	36.8%	17.7%	100%
Relative time spent	17.4%	34.6%	48.2%	
Combined				
# of projects worked on	691	508	251	1,557
% of total projects worked on	44.4%	32.6%	16.1%	100%
Relative time spent	24.6%	39.8%	50.7%	

Table 3 – Project Characteristics

Table 3 indicates that the respondents worked on a larger number of short-term projects, but spent a larger relative portion of their time working on projects of a longer duration.

The respondents were also asked to answer the question, "Considering projects you have worked on during the past three years, please indicate the relative percentage of projects you consider to have been *completed successfully*". Table 4 provides a stratification of the responses to this question.

This table presents a very interesting perspective compared with what has been reported in other studies, such as CHAOS. The respondents, the vast majority of whom are either project managers or program managers, feel relatively very confident in the success rates of their projects. As indicated in Table 3, this is based on a self-assessment of over 1,500 projects.

	U.S.		Non U.S.		Total	
Success Rate	**Frequency**	**%**	**Frequency**	**%**	**Frequency**	**%**
0-10%	1	2.2%	3	6.6%	4	4.4%
>10-20%	0	0.0%	1	2.2%	1	1.1%
>20-30%	1	2.2%	1	2.2%	2	2.2%
>30-40%	0	0.0%	1	2.2%	1	1.1%
>40-50%	3	6.7%	1	2.2%	4	4.4%
>50-60%	1	2.2%	1	2.2%	2	2.2%
>60-70%	1	2.2%	7	15.6%	8	8.9%
>70-80%	6	13.3%	12	26.7%	18	20.0%
>80-90%	8	17.8%	5	11.1%	13	14.4%
>90-100%	24	53.3%	13	28.9%	37	41.1%
Total	45	100.0%	45	100.0%	90	100.0%
Average	85.58%		74.61%		80.10%	
sd	21.70		26.95		24.94	

Table 4 – Perceived Project Success Rate

Project Management Success Factors

The survey then asked the open-ended question, "What would you consider to be the three most influential factors contributing to a successful project?". Tables 5 (U.S.), 6 (Non U.S.), and 7 (Combined) show the summarized responses to this question, for factors mentioned by at least 2 respondents.

The summarization of these project success factors was made primarily through contextual analysis of the written responses. A generalized categorization of the responses was made, and the individual responses were placed within one of the above categories. It is interesting to note that although most prior studies have ranked top management support and user involvement as the top project success criteria, the respondents in this survey, both in the U.S. and internationally, overwhelming stated communication as the number one factor. Communication was ninth on Pinto and Slevin's ranking, and not specifically mentioned in CHAOS. Top management support was listed as one of the top four most important factors, along with project manager characteristics and project team characteristics, but user involvement, specifically stated, was one of the least mentioned factors. Arguably, communication can be defined both horizontally and vertically, and would hopefully include the users, but the respondents chose not to specifically identify "user involvement" as a critical project success factor.

Success Factor	Frequency		
	#	%	Cumulative
Effective communication	25	18.1%	18.1%
Project manager characteristics	14	10.1%	28.3%
Project team characteristics/skills	14	10.1%	38.4%
Management support	14	10.1%	48.6%
Schedule management	9	6.5%	55.1%
Effective planning	7	5.1%	60.1%
Resource management	6	4.3%	64.5%
Client commitment/buy-in	6	4.3%	68.8%
Scope management	6	4.3%	73.2%
Change management	5	3.6%	76.8%
Managing client expectations	8	5.8%	82.6%
Requirements adequately defined	4	2.9%	85.5%
Risk management	4	2.9%	88.4%
Budget management	3	2.2%	90.6%
Project manager practices	3	2.2%	92.8%
Flexibility	2	1.4%	94.2%
Organization structure	2	1.4%	95.6%

Table 5 – U.S. Project Success Factors

Success Factor	Frequency		
	#	%	Cumulative
Effective communication	25	17.9%	17.9%
Project team characteristics/skills	20	14.3%	32.1%
Management support	14	10.0%	42.1%
Project manager characteristics	9	6.4%	48.6%
Resource management	8	5.7%	54.3%
Client commitment	8	5.7%	60.0%
Effective planning	7	5.0%	65.0%
Schedule management	7	5.0%	70.0%
Requirements adequately defined	6	4.3%	74.3%
Change management	5	3.6%	77.9%
Managing client expectations	5	3.6%	81.4%
Project management	5	3.6%	85.0%
Risk management	4	2.9%	87.9%
Scope management	4	2.9%	90.7%
Budget management	3	2.1%	92.9%
Project management practices	3	2.1%	95.0%
Flexibility	2	1.4%	96.4%

Table 6 – Non U.S. Project Success Factors

CONCLUSION

This study has helped shed new light, from an international perspective, on the factors that project managers themselves consider critical to achieving project success. The respondants to the survey indicated a relatively high perceived project success rate, particularly when compared with that of the CHAOS studies. They also indicated that communication among all parties is of absolute importance above all other factors, even above those traditionally cited as the top two critical success factors – top management support and user involvement. This study will continue to examine the data from the survey to determine if any correlations can be drawn among variable such as the size of projects, the perceived success rate, and the factors considered critical to project success.

Success Factor	Frequency		
	#	%	Cumulative
Communications	50	17.3%	17.3%
Project team characteristics/skills	39	13.5%	30.8%
Management support	34	11.8%	42.6%
Project manager characteristics	22	7.6%	50.2%
Schedule management	16	5.5%	55.7%
Effective planning	14	4.8%	60.6%
Resource management	14	4.8%	65.4%
Client commitment/buy-in	14	4.8%	70.2%
Managing client expectations	13	4.5%	74.7%
Scope management	10	3.5%	78.2%
Change management	10	3.5%	81.7%
Requirements adequately defined	10	3.5%	85.1%
Risk management	8	2.8%	87.9%
Budget management	6	2.1%	90.0%
Project manager practices	6	2.1%	92.0%
Flexibility	5	1.7%	93.8%
Project management	5	1.7%	95.5%
Organization structure	3	1.0%	96.5%
Documentation	2	0.7%	97.2%
User Involvement	2	0.7%	97.9%

Table 7 – Combined Project Success Factors

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